

COVID-19 and molecular hydrogen inhalation

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Recent public reports by China's National Health Commission and the Chinese Center for Disease Control and Prevention have recommended effective oxygen therapy measures as an element of general treatment in patients with novel coronavirus pneumonia (COVID-19).^{1,2} Both documents disclosed a rather exotic ratio of hydrogen and oxygen (66.6% H₂ to 33.3% O₂) as the composition of the gas mixture for inhalation. While high oxygen levels are administered due to apparent lung dysfunction in COVID-19, blending with hydrogen gas for a breathing mixture remains puzzling. Hydrogen is most likely added as an inert part of the breathing gas but it may have beneficial effects by itself.

A recent study suggested that hydrogen gas inhibits airway inflammation in patients with asthma,³ an effect that might improve the condition of inflammatory cytokines storm seen in COVID-19.⁴ Two multicenter randomized controlled trials (RCTs) with inhalational hydrogen for COVID-19 are listed in the World Health Organization (WHO) clinical trials registry in February and March 2020 yet no evidence to back up this approach is available as yet. Another factor must also be taken into consideration: the potential of high-concentration hydrogen to cause explosion ignited by static electricity.

Like other promising (and urgently needed) therapeutics for COVID-19, gaseous hydrogen thus requires accelerated yet attentive research and approval pathways, with sufficient efficacy and safety guarantees.⁵ Cutting off the corners for the simplest molecule in the Universe may be a step back for the hydrogen research community beyond this particular coronavirus.

Author contribution(s)

Sergej M. Ostojic: Conceptualization; Data curation; Formal analysis; Investigation; Project administration; Supervision; Validation; Writing-original draft; Writing-review & editing.

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